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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ULRIKE LICHT,
SUSANNE DEUTRICH,
HEINZ-PETER RINK,
and WILMA LOCKEN

Appeal 2010-004988
Application 10/553,037
Technology Center 1700

Before ADRIENE LEPIANE HANLON, LINDA M. GAUDETTE, and KAREN M. HASTINGS, *Administrative Patent Judges.*

HANLON, *Administrative Patent Judge.*

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from an Examiner's decision finally rejecting claims 8, 9, 21-38, and 40-56.[1] We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

The subject matter on appeal relates to a process for preparing a primary polyurethane dispersion. Claim 8, reproduced below, is illustrative.

> 8. A process for preparing a primary dispersion, said process comprising:
>
> reacting the following components a), b1), and c) and optionally b2), optionally b3), and optionally b4) in the presence of water, thereby obtaining an aqueous primary dispersion, which comprises at least one polyurethane;
>
> wherein
>
> a) is at least one polyisocyanate,
>
> b1) is at least one polyol comprising a structural unit $-[-CH_2-CH_2-O-]_w-$, wherein w is a positive integer from 10 to 200, wherein said structural unit $-[-CH_2-CH_2-O-]_w-$ is obtained from a synthesis component selected from the group consisting of ethylene glycol, polyethylene glycol having a number average molecular weight of between 106 and 2000, and ethylene oxide;
>
> b2) is at least one polyol other than b1),
>
> b3) is at least one compound containing at least two isocyanate-reactive groups selected from the group consisting of thiol groups and primary and secondary amino groups,

[1] An oral hearing was held on March 23, 2011.

b4) is at least one monofunctional monomer having an isocyanate-reactive group, and

c) is at least one ionic or potentially ionic synthesis component,

wherein the component c) is represented by the general formula RG-R^1-DG,

wherein RG is at least one isocyanate reactive group,

DG is at least one actively dispersing group, and

R^1 is an aliphatic, cycloaliphatic or aromatic radical comprising 1 to 20 carbon atoms;

wherein

the fraction of the structural units -[-CH_2-CH_2-O-]-, calculated at 44 g/mol, in the polyol b1) is from 10 to 90% by weight, and

the fraction of the structural units -[-CH_2-CH_2-O-]-, calculated at 44 g/mol, in the sum of the components a) + b1) + b2) + b3) + b4) + c) is at least 3% by weight.

App. Br., Claims Appendix.[2]

Claims 27, 54, and 55, the only other independent claims on appeal, are also directed to a process for preparing a primary polyurethane dispersion. However, in each of these claims, component c) is optional. App. Br., Claims Appendix.

The following Examiner's rejections are before us on appeal:

(1) Claims 8, 9, 21-38, and 40-56 are rejected under 35 U.S.C. § 112, first paragraph, based on the written description requirement.

[2] Appeal Brief dated June 23, 2009.

(2) Claims 8, 9, 21-38, and 40-56 are rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Licht,[3] Jakubowski,[4] and Scriven.[5]

B. DISCUSSION

1. Rejection under 35 U.S.C. § 112

The Examiner contends that the originally filed disclosure does not provide written description support for the "number average" molecular weights recited in claims 8, 21, 27, 29, 54, and 55. Ans. 3.[6]

The Appellants contend:

> The molecular weight of the polyethylene glycol is a number average as supported, for example at page 16, line 6 of the specification.[7] DIN 53240 describes the determination of the OH number. . . . The OH-number is always unambiguously connected with exactly one (average) molecular weight of a sample, see topic #9 of the English translation of DIN 53240. . . In case the molecular weight of the sample is distributed over a wide range, the OH number refers to average molecular weight.

App. Br. 8-9.

However, the Appellants do not explain why one of ordinary skill in the art would have understood this average molecular weight to be a

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[3] WO 02/064657 A1 dated August 2002. The Examiner relies on US 2004/0077777 A1 published April 22, 2004, as evidence of the disclosure of WO 02/064657 A1. The Appellants do not contend that the Examiner's reliance on US 2004/0077777 A1 is erroneous.

[4] US 5,959,027 issued September 28, 1999.

[5] US 4,046,729 issued September 6, 1977.

[6] Examiner's Answer dated September 28, 2009.

[7] Page 16, lines 5-8 of the Specification state, "9.5 g of a block copolymer of propylene oxide (PO) and ethylene oxide (EO) (terminal) with 21.3% by weight EO and an OH number to DIN 53240 (OHN) of 26.7 mg KOH/g are mixed with 1.07 g of 3-methylpentane-1,5-diol and 2.5 g of isophorone diisocyanate (IPDI)."

"number average" molecular weight. *See* Ans. 3-4, 11-12. For this reason, the § 112, first paragraph, rejection will be affirmed.[8]

2. Rejection under 35 U.S.C. § 103(a)

For the reasons well stated in the Examiner's Answer, we will also affirm the § 103(a) rejection on appeal. We add the following for emphasis.

The Appellants argue that paragraph [0014] of Licht discloses that "'incorporation of ionically or non-ionically hydrophilic groups' is not necessary." App. Br. 9 (emphasis in original omitted). Therefore, the Appellants argue that Licht teaches away from a combination with other documents disclosing emulsifiers for polyisocyanates. App. Br. 9.

The Examiner responds as follows:

> The appellant argues that Licht et al. teaches away from using the instantly claimed component c and ethylene oxide chains and amounts thereof, noting paragraph [0014], "Also dispensed with are the additional measures for producing self-dispersibility through incorporation of ionically or non-ionically hydrophilic groups." This does not state that these components are not necessary, as argued by the appellant. This section clearly relates to the "additional measures" per se. The examiner points out that paragraph [0027] specifically teaches that polyether diols of ethylene oxide and mixtures thereof with other alkylene oxide monomers, which have the instantly claimed molecular weights (paragraph [0022]) may be used as the polyol of Licht et al.. This clearly does not teach away from the use of hydrophilic polyethers.

Ans. 14.

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[8] At the oral hearing, the Appellants' representative argued, for the first time on appeal, that the molecular weight determined by DIN 53240 is a "number average" molecular weight because the molecular weight is an average value based on the number of experiments performed. Since this argument was not timely raised in the briefs, it has not been considered on appeal. 37 C.F.R. § 41.47(e)(1) (2010).

Although Licht does not teach the use of claimed component c), i.e., "at least one ionic or potentially ionic synthesis component,"[9] the Examiner finds that Licht uses an emulsifier as an alternative to component c). *See, e.g.,* Licht, para. [0055]. The Examiner explains that it was known in the art that an external emulsifier may adversely affect film properties and adhesion. *See, e.g.*, Jakubowski 5:39-67. The Examiner also explains that ethylene oxide chains and/or ionic groups that are chemically incorporated into polyurethane were known to stabilize polyurethane in water and reduce the need for external emulsifier. *See, e.g.*, Scriven 5:15-25. The Examiner concludes that it would have been within the skill of the ordinary artisan to adjust the amount of ethylene oxide chains and ionic groups in the polyurethane of Licht to reduce the amount of external emulsifier and any adverse effects caused thereby. Ans. 7-8, 10, 12-14. The Appellants do not direct us to any error in the Examiner's position.[10]

The Appellants also argue:

> [Scriven] discloses "the reaction product of ethylene glycol with a mixture of propylene oxide and ethylene oxide" (col. 8, line 49) as well as salt groups which may be anionic or cationic (col. 11, lines 1 to 36). However, the polyalkylene ether polyol according to [Scriven] contains 2 to 6 alkylene oxide units (col. 8, line 46) while the polyols of the present invention contain more alkylene oxide units than [Scriven], namely 10 to 200.

App. Br. 10.

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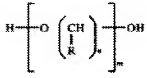
[9] Component c) is optional in independent claims 27, 54, and 55.

[10] The Appellants argue that Jakubowski "is silent about mixed polyalkylene oxides." App. Br. 10. However, this argument fails to consider the prior art as a whole. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). As discussed above, the Examiner relies on Jakubowski as providing a reason to chemically incorporate emulsifying groups into the polyurethane of Licht. Ans. 7.

Scriven discloses:

> Any suitable polyalkylene ether polyol may be used including those which have the following structural formula:
>
> 
>
> where the substituent R is hydrogen or lower alkyl including mixed substituents, and *n* is typically from 2 to 6 and *m* is from 2 to 100 or even higher.

Scriven 8:34-47.

Thus, contrary to the Appellants' arguments, Scriven suggests a structural unit as claimed, i.e., $-[-CH_2-CH_2-O-]_m-$ where *m* overlaps the claimed range, i.e., *m* is from 2 to 100 or even higher.

Finally, as to dependent claims 9, 21-26, 28-38, and 40-56, the Appellants do not direct us to any error in the Examiner's findings of fact or conclusions of law. The Appellants merely reproduce limitations recited in each of these claims and generally allege that Licht, Jakubowski, and Scriven, either alone or in combination, do not disclose or suggest the claim limitations. App. Br. 10-16.

In view of the respective positions of the Examiner and the Appellants and the evidence of record, we conclude that the preponderance of the evidence weighs in favor of obviousness under § 103(a).[11]

[11] At the oral hearing, the Appellants' representative presented several arguments directed to the § 103(a) rejection for the first time on appeal, including the argument that the Examiner's proposed combination changes Licht's principle of operation. Since the arguments were not timely raised in the briefs, they have not been considered on appeal. 37 C.F.R. § 41.47(e)(1) (2010).

D. DECISION

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

tc